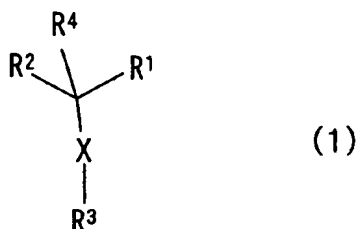


[Designation of Document] Claims

[Claim 1]

A compound represented by the following formula (1):

[Chemical formula 1]



(wherein, R¹ and R³ each independently represents an aromatic hydrocarbon group which may have a substituent or an aromatic heterocyclic group which may have a substituent, R² represents a saturated or unsaturated monocyclic heterocyclic group or unsaturated polycyclic heterocyclic group which may have a substituent, R⁴ represents a hydrogen atom or a C₁₋₆ alkyl group, X represents -S-, -SO- or -SO₂-); an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 2]

A compound according to Claim 1, wherein R¹ and R³ each independently represents a phenyl group which may have a substituent; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 3]

A compound according to Claim 1, wherein R¹ and R³

each independently represents an aromatic hydrocarbon group or aromatic heterocyclic group which may have 1 to 3 substituents selected from halogen atoms, C₁₋₆ alkyl groups, trihalogenomethyl groups, C₁₋₆ alkoxy groups, formyl group, C₂₋₆ alkanoyl groups, carboxyl group, carboxyamino C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonylamino C₁₋₆ alkyl groups, oxo group, nitro group, cyano group, amidino group, C₂₋₆ alkenyloxy groups, hydroxy group, thioxo group, amino group, C₁₋₆ alkylamino groups, di(C₁₋₆ alkyl)amino groups, C₁₋₆ alkoxycarbonyl groups, carbamoyl group, C₁₋₆ alkylcarbamoyl groups, di(C₁₋₆ alkyl)carbamoyl groups, thiocarbamoyl group, C₁₋₆ alkylthiocarbamoyl groups, di(C₁₋₆ alkyl)thiocarbamoyl groups, mercapto group, C₁₋₆ alkylthio groups, C₁₋₆ alkylsulfinyl groups and C₁₋₆ alkylsulfonyl groups; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 4]

A compound according to Claim 1, wherein R¹ and R³ each independently represents a phenyl group which may have 1 to 3 substituents selected from halogen atoms, C₁₋₆ alkyl groups, trihalogenomethyl groups, C₁₋₆ alkoxy groups, formyl group, C₂₋₆ alkanoyl groups, carboxyl group, carboxyamino C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonylamino C₁₋₆ alkyl groups, oxo group, nitro group, cyano group, amidino group, C₂₋₆ alkenyloxy groups, hydroxy group, thioxo group, amino

group, C₁₋₆ alkylamino groups, di(C₁₋₆ alkyl)amino groups, C₁₋₆ alkoxy carbonyl groups, carbamoyl group, C₁₋₆ alkylcarbamoyl groups, di(C₁₋₆ alkyl)carbamoyl groups, thiocarbamoyl group, C₁₋₆ alkylthiocarbamoyl groups, di(C₁₋₆ alkyl)thiocarbamoyl groups, mercapto group, C₁₋₆ alkylthio groups, C₁₋₆ alkylsulfinyl groups and C₁₋₆ alkylsulfonyl groups; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 5]

A compound according to any one of Claims 1 to 4, wherein R² represents a pyridyl group which may have a substituent; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 6]

A compound according to any one of Claims 1 to 4, wherein R² represents a monocyclic or polycyclic heterocyclic group which may have 1 to 3 substituents selected from halogen atoms, cyano group, C₁₋₆ alkyl groups, hydroxy group, C₁₋₆ alkoxy groups, C₂₋₆ alkenyloxy groups, carboxy C₁₋₆ alkyl groups, C₁₋₆ alkoxy carbonyl C₁₋₆ alkyl groups, heterocyclic-carbonyl C₁₋₆ alkyl groups, hydroxy C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-sulfonyl C₁₋₆ alkyl groups, N,N-dialkylaminosulfonyl C₁₋₆ alkyl groups, heterocyclic-C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-thio C₁₋₆ alkyl

groups, azido-C₁₋₆ alkyl groups, amino C₁₋₆ alkyl groups, C₁₋₆ alkylamino C₁₋₆ alkyl groups, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl groups, hydroxy C₁₋₆ alkylamino C₁₋₈ alkyl groups, C₁₋₆ alkoxy C₁₋₆ alkylamino C₁₋₆ alkyl groups, bis(C₁₋₆ alkoxy C₁₋₆ alkyl)amino C₁₋₆ alkyl groups, (hydroxy C₁₋₆ alkyl)(C₁₋₆ alkoxy C₁₋₆ alkyl)amino C₁₋₆ alkyl groups, C₂₋₆ alkanoylamino C₁₋₆ alkyl groups, di(C₂₋₆ alkanoyl)amino C₁₋₆ alkyl groups, carboxyamino C₁₋₆ alkyl groups, di(C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl)amino C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonylamino C₁₋₆ alkyl groups, di(C₁₋₆ alkoxycarbonyl)amino C₁₋₆ alkyl groups, carbamoylamino C₁₋₆ alkyl groups, N-C₁₋₆ alkylcarbamoylamino C₁₋₆ alkyl groups, N,N-di(C₁₋₆ alkyl)carbamoylamino C₁₋₆ alkyl groups, aminosulfonylamino C₁₋₆ alkyl groups, N-C₁₋₆ alkylsulfonylamino C₁₋₆ alkyl groups, di(C₁₋₆ alkyl)aminosulfonylamino C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-sulfonylamino-C₁₋₆ alkanoylamino C₁₋₆ alkyl groups, amino C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl groups, N-C₁₋₆ alkylamino C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl groups, N,N-di(C₁₋₆ alkyl)amino C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl groups, heterocycle-C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl groups, heterocycle-C₂₋₆ alkenylcarbonylamino C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-alkenylcarbonylamino C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-carbonylamino C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-thiocarbonylamino C₁₋₆ alkyl groups, heterocycle-carbonylamino C₁₋₆ alkyl

groups, C₁₋₆ alkoxyoxalylamino C₁₋₆ alkyl groups, (C₆₋₁₀ aromatic hydrocarbon-sulfonyl)(C₁₋₆ alkyl)amino C₁₋₆ alkyl groups, C₁₋₆ alkylsulfonylamino C₁₋₆ alkyl groups, C₁₋₆ alkylsulfonylamino C₁₋₆ alkyl groups, carbamoyloxy C₁₋₆ alkyl groups, N-C₁₋₆ alkylcarbamoyloxy C₁₋₆ alkyl groups, N,N-di(C₁₋₆ alkyl)carbamoyloxy C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-C₁₋₆ alkylcarbamoyloxy C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonyloxy-C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-oxycarbonyloxy C₁₋₆ alkyl groups, heterocyclic carbonylhydrazonomethyl groups, C₆₋₁₀ aromatic hydrocarbon-carbonylhydrazonomethyl groups, C₂₋₆ alkenyl groups, carboxy-C₂₋₆ alkenyl groups, C₁₋₆ alkoxycarbonyl-C₂₋₆ alkenyl groups, carbamoyl C₂₋₆ alkenyl groups, heterocycle-alkenyl groups, formyl group, carboxyl group, heterocycle-carbonyl groups, C₆₋₁₀ aromatic hydrocarbon-carbonyl groups, C₁₋₆ alkoxycarbonyl groups, carbamoyl group, N-C₁₋₆ alkylcarbamoyl groups, N,N-di(C₁₋₆ alkyl)carbamoyl groups, C₃₋₈ cycloalkyl-C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkylthio C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkylsulfinyl C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkylsulfonyl C₁₋₆ alkylcarbamoyl groups, hydroxyaminocarbonyl group, C₁₋₆ alkoxy-carbamoyl groups, hydroxy C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkoxy C₁₋₆ alkylcarbamoyl groups, amino C₁₋₆ alkylcarbamoyl groups, amino C₁₋₆ alkylthiocarbamoyl groups, hydroxy C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkoxycarbonyl C₁₋₆

alkylcarbamoyl groups, C₁₋₆ alkoxy-carbonylamino C₁₋₆
 alkylcarbamoyl groups, C₁₋₆ alkoxy-carbonylamino C₁₋₆
 alkylthiocarbamoyl groups, heterocycle-carbamoyl groups,
 heterocycle-C₁₋₆ alkylcarbamoyl groups, C₆₋₁₀ aromatic
 hydrocarbon-carbamoyl groups, hydrazinocarbonyl group, N-
 C₁₋₆ alkylhydrazinocarbonyl groups, N'-C₁₋₆
 alkylhydrazinocarbonyl groups, N',N'-di(C₁₋₆
 alkyl)hydrazinocarbonyl groups, N,N'-di(C₁₋₆
 alkyl)hydrazinocarbonyl groups, N,N',N'-tri(C₁₋₆
 alkyl)hydrazinocarbonyl groups, N'-(heterocycle-carbonyl)-
 hydrazinocarbonyl groups, amino group, C₁₋₆ alkoxy C₁₋₆
 alkylamino groups, amino C₁₋₆ alkylamino groups, C₁₋₆
 alkylamino C₁₋₆ alkylamino groups, (C₁₋₆ alkylamino C₁₋₆
 alkyl)(C₁₋₆ alkyl)amino groups, (C₁₋₆ alkylcarbonylamino C₁₋₆
 alkyl)amino groups, (C₁₋₆ alkylsulfonylamino C₁₋₆ alkyl)amino
 groups, C₁₋₆ alkoxy-carbonylamino C₁₋₆ alkylamino groups,
 di(C₁₋₆ alkyl)amino C₁₋₆ alkylamino groups, heterocycle-amino
 C₁₋₆ alkylamino groups, carboxyl C₁₋₆ alkylamino groups,
 (carboxyl C₁₋₆ alkyl)(C₁₋₆ alkyl)amino groups, heterocycle-
 C₁₋₆ alkylamino groups, (heterocycle-C₁₋₆ alkyl)(C₁₋₆
 alkyl)amino groups, hydroxy C₁₋₆ alkylamino groups, (hydroxy
 C₁₋₆ alkyl)(C₁₋₆ alkyl)amino groups, C₁₋₆ alkylthio C₁₋₆
 alkylamino groups, C₁₋₆ alkylaminocarbonyloxy C₁₋₆ alkylamino
 groups, (C₁₋₆ alkylaminocarbonyloxy C₁₋₆ alkyl)(C₁₋₆
 alkyl)amino groups, C₁₋₆ alkylsulfinyl C₁₋₆ alkylamino

groups, C₁₋₆ alkylsulfonyl C₁₋₆ alkylamino groups, groups represented by the formula: -N(R¹²)SO₂R¹¹ (wherein, R¹¹ represents a C₁₋₆ alkyl group, heterocyclic group, C₁₋₆ alkyl-heterocyclic group, heterocycle-C₁₋₆ alkyl group, hydroxy C₁₋₆ alkyl group, amino C₁₋₆ alkyl group, C₁₋₆ alkylamino C₁₋₆ alkyl group, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl group, carboxy C₁₋₆ alkyl group, carbamoyl C₁₋₆ alkyl group, trifluoromethyl group, difluoromethyl group, fluoromethyl group, amino group, C₁₋₆ alkylamino group or di(C₁₋₆ alkyl)amino group, R¹² represents hydrogen atom, C₁₋₆ alkyl group, hydroxy group or amino group), hydroxy C₁₋₆ alkoxy C₁₋₆ alkylamino groups, C₆₋₁₀ aromatic hydrocarbon-C₁₋₆ alkylamino groups, heterocycle-carbonylamino groups, C₁₋₆ alkoxy-carbonylamino groups, heterocycle-C₁₋₆ alkyl-carbonylamino groups, C₆₋₁₀ aromatic hydrocarbon-carbonylamino groups, heterocycle-amino groups, hydroxyimino group, C₁₋₆ alkoxyimino groups, oxo group, hydroxyimino C₁₋₆ alkyl groups, C₁₋₆ alkoxy-carbonyl C₁₋₆ alkylamino groups, (C₂₋₆ alkanoylamino C₁₋₆ alkyl)amino groups, C₆₋₁₀ aromatic hydrocarbon groups, and heterocyclic groups (in which, the C₆₋₁₀ aromatic hydrocarbon group or heterocycle or heterocyclic group may be substituted with 1 to 3 substituents selected from halogen atoms, C₁₋₆ alkyl groups, C₁₋₆ alkoxy groups, C₂₋₆ alkenyl groups, formyl group, C₂₋₆ alkanoyl groups, carboxyl group, carboxyamino

C₁₋₆ alkyl groups, C₁₋₆ alkoxy carbonylamino C₁₋₆ alkyl groups, oxo group, nitro group, cyano group, amidino group, C₂₋₆ alkenyloxy groups, hydroxy group, thioxo group, amino group, C₁₋₆ alkylamino groups, di(C₁₋₆ alkyl)amino groups, amino C₁₋₆ alkyl groups, C₁₋₆ alkoxy carbonyl groups, carbamoyl group, C₁₋₆ alkyl carbamoyl groups, di(C₁₋₆ alkyl)carbamoyl groups, thiocarbamoyl group, C₁₋₆ alkylthiocarbamoyl groups, di(C₁₋₆ alkyl)thiocarbamoyl groups, C₂₋₆ alkanoylamino groups, C₂₋₆ alkanoyl(C₁₋₆ alkyl)amino groups, thio C₂₋₆ alkanoylamino groups, thio C₂₋₆ alkanoyl(C₁₋₆ alkyl)amino groups, formylamino group, formyl(C₁₋₆ alkyl)amino groups, thioformylamino group, thioformyl(C₁₋₆ alkyl)amino groups, C₂₋₆ alkanoyloxy groups, formyloxy group, mercapto group, C₁₋₆ alkylthio groups, C₁₋₆ alkylsulfinyl groups, C₁₋₆ alkylsulfonyl groups, aminosulfonyl group, C₁₋₆ alkylaminosulfonyl groups, di(C₁₋₆ alkyl)aminosulfonyl groups, C₁₋₆ alkylsulfonylamino groups, and C₁₋₆ alkylsulfonyl(C₁₋₆ alkyl)amino groups) ; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 7]

A compound according to Claim 5, wherein R² represents a pyridyl group which may be substituted with 1 to 3 substituents selected from halogen atoms, cyano group, C₁₋₆ alkyl groups, hydroxy group, C₁₋₆ alkoxy groups, C₂₋₆ alkenyloxy groups, carboxy C₁₋₆ alkyl groups, C₁₋₆

alkoxycarbonyl C₁₋₆ alkyl groups, heterocycle-carbonyl C₁₋₆
 alkyl groups, hydroxy C₁₋₆ alkyl groups, C₆₋₁₀ aromatic
 hydrocarbon-sulfonyl C₁₋₆ alkyl groups, N,N-di(C₁₋₆
 alkyl)aminosulfonyl C₁₋₆ alkyl groups, heterocycle-C₁₋₆ alkyl
 groups, C₆₋₁₀ aromatic hydrocarbon-C₁₋₆ alkyl groups, C₆₋₁₀
 aromatic hydrocarbon-thio C₁₋₆ alkyl groups, azido-C₁₋₆ alkyl
 groups, amino C₁₋₆ alkyl groups, C₁₋₆ alkylamino C₁₋₆ alkyl
 groups, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl groups, hydroxy C₁₋₆
 alkylamino C₁₋₆ alkyl groups, C₁₋₆ alkoxy C₁₋₆ alkylamino C₁₋₆
 alkyl groups, bis(C₁₋₆ alkoxy C₁₋₆ alkyl)amino C₁₋₆ alkyl
 groups, (hydroxy C₁₋₆ alkyl)(C₁₋₆ alkoxy C₁₋₆ alkyl)amino C₁₋₆
 alkyl groups, C₂₋₆ alkanoylamino C₁₋₆ alkyl groups, di(C₂₋₆
 alkanoyl)amino C₁₋₆ alkyl groups, carboxyamino C₁₋₆ alkyl
 groups, di(C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl)amino C₁₋₆ alkyl
 groups, C₁₋₆ alkoxycarbonylamino C₁₋₆ alkyl groups, di(C₁₋₆
 alkoxycarbonyl)amino C₁₋₆ alkyl groups, carbamoylamino C₁₋₆
 alkyl groups, N-C₁₋₆ alkylcarbamoylamino C₁₋₆ alkyl groups,
 N,N-di(C₁₋₆ alkyl)carbamoylamino C₁₋₆ alkyl groups,
 aminosulfonylamino C₁₋₆ alkyl groups, N-C₁₋₆
 alkylsulfonylamino C₁₋₆ alkyl groups, di(C₁₋₆
 alkyl)aminosulfonylamino C₁₋₆ alkyl groups, C₆₋₁₀ aromatic
 hydrocarbon-sulfonylamino-C₂₋₆ alkanoylamino C₁₋₆ alkyl
 groups, amino C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl groups, N-
 C₁₋₆ alkylamino C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl groups,
 N,N-di(C₁₋₆ alkyl)amino C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl

groups, heterocycle-C₁₋₆ alkylcarbonylamino C₁₋₆ alkyl
 groups, heterocycle-C₂₋₆ alkenylcarbonylamino C₁₋₆ alkyl
 groups, C₆₋₁₀ aromatic hydrocarbon-C₂₋₆ alkenylcarbonylamino
 C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-carbonylamino
 C₁₋₆ alkyl groups, C₆₋₁₀ aromatic hydrocarbon-
 thiocarbonylamino C₁₋₆ alkyl groups, heterocycle-
 carbonylamino C₁₋₆ alkyl groups, C₁₋₆ alkoxyoxalylamino C₁₋₆
 alkyl groups, (C₆₋₁₀ aromatic hydrocarbon-sulfonyl) (C₁₋₆
 alkyl)amino C₁₋₆ alkyl groups, C₁₋₆ alkylsulfonylamino C₁₋₆
 alkyl groups, C₁₋₆ alkylsulfonylamino C₁₋₆ alkyl groups,
 carbamoyloxy C₁₋₆ alkyl groups, N-C₁₋₆ alkylcarbamoyloxy C₁₋₆
 alkyl groups, N,N-di(C₁₋₆ alkyl)carbamoyloxy C₁₋₆ alkyl
 groups, C₆₋₁₀ aromatic hydrocarbon-C₁₋₆ alkylcarbamoyloxy C₁₋₆
 alkyl groups, C₁₋₆ alkoxy-carbonyloxy-C₁₋₆ alkyl groups, C₆₋₁₀
 aromatic hydrocarbon-oxycarbonyloxy C₁₋₆ alkyl groups,
 heterocycle carbonylhydrazonomethyl groups, C₆₋₁₀ aromatic
 hydrocarbon carbonylhydrazonomethyl groups, C₂₋₆ alkenyl
 groups, carboxy-C₂₋₅ alkenyl groups, C₁₋₆ alkoxy-carbonyl-C₂₋₆
 alkenyl groups, carbamoyl C₂₋₆ alkenyl groups, heterocycle-
 C₂₋₆ alkenyl groups, formyl group, carboxyl group,
 heterocycle-carbonyl groups, C₆₋₁₀ aromatic hydrocarbon-
 carbonyl groups, C₁₋₆ alkoxy-carbonyl groups, carbamoyl
 group, N-C₁₋₆ alkylcarbamoyl groups, N,N-di(C₁₋₆
 alkyl)carbamoyl groups, C₃₋₈ cycloalkyl-C₁₋₆ alkylcarbamoyl
 groups, C₁₋₆ alkylthio C₁₋₆ alkylcarbamoyl groups, C₁₋₆

alkylsulfinyl C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkylsulfonyl
 C₁₋₆ alkylcarbamoyl groups, hydroxyaminocarbonyl group, C₁₋₆
 alkoxy carbamoyl groups, hydroxy C₁₋₆ alkylcarbamoyl groups,
 C₁₋₆ alkoxy C₁₋₆ alkylcarbamoyl groups, amino C₁₋₆
 alkylcarbamoyl groups, amino C₁₋₆ alkylthiocarbamoyl groups,
 hydroxy C₁₋₆ alkylcarbamoyl groups, C₁₋₆ alkoxy carbonyl C₁₋₆
 alkylcarbamoyl groups, C₁₋₆ alkoxy carbonylamino C₁₋₆
 alkylcarbamoyl groups, C₁₋₆ alkoxy carbonylamino C₁₋₆
 alkylthiocarbamoyl groups, heterocycle-carbamoyl groups,
 heterocycle-C₁₋₆ alkylcarbamoyl groups, C₆₋₁₀ aromatic
 hydrocarbon-carbamoyl groups, hydrazinocarbonyl groups, N-
 C₁₋₆ alkylhydrazinocarbonyl groups, N'-C₁₋₆
 alkylhydrazinocarbonyl groups, N',N'-di(C₁₋₆
 alkyl)hydrazinocarbonyl groups, N,N'-di(C₁₋₆
 alkyl)hydrazinocarbonyl groups, N,N',N'-tri(C₁₋₆
 alkyl)hydrazinocarbonyl groups, N'-(heterocycle-carbonyl)-
 hydrazinocarbonyl groups, amino group, C₁₋₆ alkoxy C₁₋₆
 alkylamino groups, amino C₁₋₆ alkylamino groups, (C₁₋₆
 alkylamino C₁₋₆ alkylamino groups, (C₁₋₆ alkylamino C₁₋₆
 alkyl)(C₁₋₆ alkyl)amino groups, C₁₋₆ alkoxy carbonylamino C₁₋₆
 alkylamino groups, di(C₁₋₆ alkyl)amino C₁₋₆ alkylamino
 groups, heterocycle-amino C₁₋₆ alkylamino groups, carboxyl
 C₁₋₆ alkylamino groups, (carboxyl C₁₋₆ alkyl)(C₁₋₆ alkyl)amino
 groups, heterocycle-C₁₋₆ alkylamino groups, (heterocycle-C₁₋₆
 alkyl)(C₁₋₆ alkyl)amino groups, hydroxy C₁₋₆ alkylamino

groups, (hydroxy C₁₋₆ alkyl) (C₁₋₆ alkyl)amino groups, C₁₋₆ alkylthio C₁₋₆ alkylamino groups, C₁₋₆ alkylaminocarbonyloxy C₁₋₆ alkylamino groups, (C₁₋₆ alkylaminocarbonyloxy C₁₋₆ alkyl) (C₁₋₆ alkyl)amino groups, C₁₋₆ alkylsulfinyl C₁₋₆ alkylamino groups, C₁₋₆ alkylsulfonyl C₁₋₆ alkylamino groups, groups represented by the formula: -N(R¹²)SO₂R¹¹ (wherein, R¹¹ represents a C₁₋₆ alkyl group, heterocyclic group, C₁₋₆ alkyl-heterocyclic group, heterocycle-C₁₋₆ alkyl group, hydroxy C₁₋₆ alkyl group, amino C₁₋₆ alkyl group, C₁₋₆ alkylamino C₁₋₆ alkyl group, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl group, carboxy C₁₋₆ alkyl group, carbamoyl C₁₋₆ alkyl group, trifluoromethyl group, difluoromethyl group, fluoromethyl group, amino group, C₁₋₆ alkylamino group or di(C₁₋₆ alkyl)amino group, R¹² represents a hydrogen atom, C₁₋₆ alkyl group, hydroxy group or amino group), hydroxy C₁₋₆ alkoxy C₁₋₆ alkylamino groups, C₆₋₁₀ aromatic hydrocarbon-C₁₋₆ alkylamino groups, heterocycle-carbonylamino groups, C₁₋₆ alkoxycarbonylamino groups, heterocycle-C₁₋₆ alkylcarbonylamino groups, C₆₋₁₀ aromatic hydrocarbon-carbonylamino groups, heterocycle-amino groups, hydroxyimino group, C₁₋₆ alkoxyimino groups, oxo group, hydroxyimino C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonyl C₁₋₆ alkylamino groups, (C₂₋₆ alkanoylamino C₁₋₆ alkyl)amino groups, C₆₋₁₀ aromatic hydrocarbon groups, and heterocyclic groups (in which, the C₆₋₁₀ aromatic hydrocarbon group or

heterocyclic group may be substituted with 1 to 3

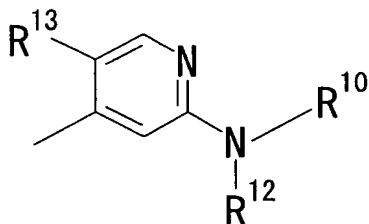
substituents selected from halogen atoms, C₁₋₆ alkyl groups, C₁₋₆ alkoxy groups, C₂₋₆ alkenyl groups, formyl group, C₂₋₆ alkanoyl groups, carboxyl group, carboxyamino C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonylamino C₁₋₆ alkyl groups, oxo group, nitro group, cyano group, amidino group, C₂₋₆ alkenyloxy groups, hydroxy group, thioxo group, amino group, C₁₋₆ alkylamino groups, di(C₁₋₆ alkyl)amino groups, amino C₁₋₆ alkyl groups, C₁₋₆ alkoxycarbonyl groups, carbamoyl group, C₁₋₆ alkylcarbamoyl groups, di(C₁₋₆ alkyl)carbamoyl groups, thiocarbamoyl group, C₁₋₆ alkylthiocarbamoyl groups, di(C₁₋₆ alkyl)thiocarbamoyl groups, C₂₋₆ alkanoylamino groups, C₂₋₆ alkanoyl(C₁₋₆ alkyl)amino groups, thio C₂₋₆ alkanoylamino groups, thio C₂₋₆ alkanoyl(C₁₋₆ alkyl)amino groups, formylamino group, formyl(C₁₋₆ alkyl)amino groups, thioformylamino group, thioformyl(C₁₋₆ alkyl)amino groups, C₂₋₆ alkanoyloxy groups, formyloxy group, mercapto group, C₁₋₆ alkylthio groups, C₁₋₆ alkylsulfinyl groups, C₁₋₆ alkylsulfonyl groups, aminosulfonyl group, C₁₋₆ alkylaminosulfonyl groups, di(C₁₋₆ alkyl)aminosulfonyl groups, C₁₋₆ alkylsulfonylamino groups, and C₁₋₆ alkylsulfonyl(C₁₋₆ alkyl)amino groups; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 8]

A compound according to Claim 5, wherein R²

represents a group represented by the following formula:

[Chemical formula 2]



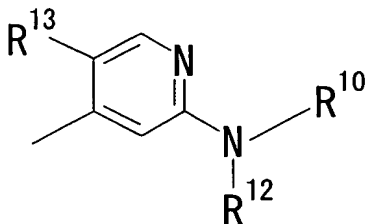
(wherein, R¹⁰ represents a hydrogen atom, C₁₋₆ alkyl group, hydroxy C₁₋₆ alkyl group, C₁₋₆ alkylsulfinyl C₁₋₆ alkyl group, C₁₋₆ alkylsulfonyl C₁₋₆ alkyl group, carboxy C₁₋₆ alkyl group, heterocycle-C₁₋₆ alkyl group, or a group represented by the formula: -SO₂-R¹¹ (in which, R¹¹ represents a C₁₋₆ alkyl, heterocyclic, C₁₋₆ alkyl-heterocyclic, heterocycle-C₁₋₆ alkyl, hydroxy C₁₋₆ alkyl, amino C₁₋₆ alkyl, C₁₋₆ alkylamino C₁₋₆ alkyl, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl, carboxy C₁₋₆ alkyl, carbamoyl C₁₋₆ alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C₁₋₆ alkylamino or di(C₁₋₆ alkyl)amino), R¹² represents a hydrogen atom, C₁₋₆ alkyl group, hydroxy group, or amino group, or R¹¹ and R¹² may, taken together with a sulfur atom to which R¹¹ is attached and a nitrogen atom to which R¹² is attached, form a 5- or 6-membered aliphatic heterocycle, and R¹³ represents a C₁₋₆ alkyl group, halogen atom or cyano group); an N-oxide or S oxide thereof; a salt thereof; or a solvate thereof.

[Claim 9]

A compound according to Claim 5, wherein R²

represents a group represented by the following formula:

[Chemical formula 3]

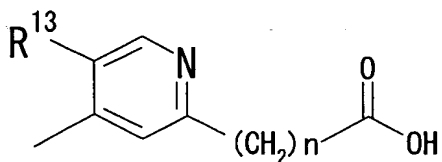


(wherein, R¹⁰ represents a group represented by the formula: -SO₂-R¹¹ (in which, R¹¹ represents a C₁₋₆ alkyl, heterocyclic, C₁₋₆ alkyl-heterocyclic, heterocycle-C₁₋₆ alkyl, hydroxy C₁₋₆ alkyl, amino C₁₋₆ alkyl, C₁₋₆ alkylamino C₁₋₆ alkyl, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl, carboxy C₁₋₆ alkyl, carbamoyl C₁₋₆ alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C₁₋₆ alkylamino or di(C₁₋₆ alkyl)amino), R¹² represents a hydrogen atom, C₁₋₆ alkyl group, hydroxy group or amino group, or R¹¹ and R¹² may, taken together with a sulfur atom to which R¹¹ is attached and a nitrogen atom to which R¹² is attached, form a 5- or 6-membered aliphatic heterocycle, and R¹³ represents a C₁₋₆ alkyl group, halogen atom or cyano group); an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 10]

A compound according to Claim 5, wherein R² represents a compound represented by the formula:

[Chemical formula 4]

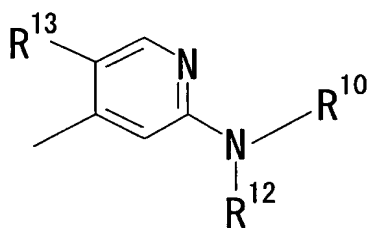


(wherein, R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group, and n stands for an integer of from 0 to 6); an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof

[Claim 11]

A compound according to Claim 1, wherein R^1 represents a 2,5-difluorophenyl or 2-fluoro-5-cyanophenyl group, R^3 represents a 4-chlorophenyl, 4-fluorophenyl, 2,4-difluorophenyl, 3,4-difluorophenyl, 3-fluoro-4-chlorophenyl, 4-trifluoromethylphenyl, 5-chloro-2-thienyl, 5-chloro-2-pyridyl, 6-chloro-3-pyridyl, or 6-trifluoromethyl-3-pyridyl group; R^2 represents a group represented by the following formula:

[Chemical formula 5]



(wherein, R^{10} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy C_{1-6} alkyl group, C_{1-6} alkylsulfinyl C_{1-6} alkyl group, C_{1-6} alkylsulfonyl C_{1-6} alkyl group, carboxy C_{1-6} alkyl group, heterocycle- C_{1-6} alkyl group, or a group represented by the

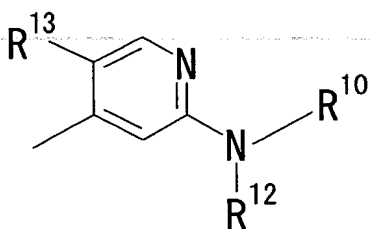
formula: $-\text{SO}_2-\text{R}^{11}$ (in which, R^{11} represents a C_{1-6} alkyl, heterocyclic, C_{1-6} alkyl-heterocyclic, heterocycle- C_{1-6} alkyl, hydroxy C_{1-6} alkyl, amino C_{1-6} alkyl, C_{1-6} alkylamino C_{1-6} alkyl, di(C_{1-6} alkyl)amino C_{1-6} alkyl, carboxy C_{1-6} alkyl, carbamoyl C_{1-6} alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C_{1-6} alkylamino, or di(C_{1-6} alkyl)amino), R^{12} represents a hydrogen atom, C_{1-6} alkyl group, hydroxy group, or amino group, or R^{11} and R^{12} may, taken together with a sulfur atom to which R^{11} is attached and a nitrogen atom to which R^{12} is attached, form a 5- or 6-membered aliphatic heterocycle, and R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group); an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 12]

A compound according to Claim 1, wherein R^1 represents a 2,5-difluorophenyl or 2-fluoro-5-cyanophenyl group, R^3 represents a 4-chlorophenyl, 4-fluorophenyl, 2,4-difluorophenyl, 3,4-difluorophenyl, 3-fluoro-4-chlorophenyl, 4-trifluoromethylphenyl, 5-chloro-2-thienyl, 5-chloro-2-pyridyl, 6-chloro-3-pyridyl or 6-trifluoromethyl-3-pyridyl group;

R^2 represents a group represented by the following formula:


[Chemical formula 6]



(wherein, R¹⁰ represents a group represented by the formula: -SO₂-R¹¹ (in which, R¹¹ represents a C₁₋₆ alkyl, heterocyclic, C₁₋₆ alkyl-heterocyclic, heterocycle-C₁₋₆ alkyl, hydroxy C₁₋₆ alkyl, amino C₁₋₆ alkyl, C₁₋₆ alkylamino C₁₋₆ alkyl, di(C₁₋₆ alkyl)amino C₁₋₆ alkyl, trifluoromethyl, difluoromethyl, fluoromethyl, amino, C₁₋₆ alkylamino or di(C₁₋₆ alkyl)amino), R¹² represents a hydrogen atom, C₁₋₆ alkyl group, hydroxy group or amino group, or R¹¹ and R¹² may, taken together with a sulfur atom to which R¹¹ is attached and a nitrogen atom to which R¹² is attached, form a 5- or 6-membered aliphatic heterocycle, and R¹³ represents a C₁₋₆ alkyl group, halogen atom or cyano group); an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

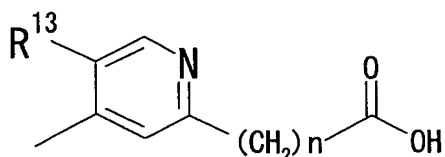
[Claim 13]

A compound according to Claim 1, wherein R¹ represents a 2,5-difluorophenyl or 2-fluoro-5-cyanophenyl group, R³ represents a 4-chlorophenyl, 4-fluorophenyl, 2,4-difluorophenyl, 3,4-difluorophenyl, 3-fluoro-4-chlorophenyl, 4-trifluoromethylphenyl, 5-chloro-2-thienyl, 5-chloro-2-pyridyl, 6-chloro-3-pyridyl, or 6-

 trifluoromethyl-3-pyridyl group;

R^2 represents a group represented by the following formula:

[Chemical formula 7]



(wherein, R^{13} represents a C_{1-6} alkyl group, halogen atom or cyano group and n stands for an integer of from 0 to 6); an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 14]

A medicament comprising, as an effective ingredient, a compound as claimed in any one of Claims 1 to 13; an N-oxide or S-oxide thereof; a salt thereof; or a solvate thereof.

[Claim 15]

A medicament according to Claim 14, which is used for prevention or treatment of a disease resulting from abnormal production or secretion of β -amyloid protein.

[Claim 16]

A medicament according to Claim 15, wherein the disease resulting from abnormal production or secretion of β amyloid protein is Alzheimer disease or Down syndrome.

[Claim 17]

A pharmaceutical composition comprising a compound as claimed in any one of Claims 1 to 13, an N-oxide or S oxide thereof, a salt thereof or a solvate thereof and a pharmaceutically acceptable carrier.

[Claim 18]

Use of a compound as claimed in any one of Claims 1 to 13, an N-oxide or S oxide thereof, a salt thereof or a solvate thereof for the preparation of a medicament.

[Claim 19]

Use according to Claim 18, wherein the medicament is a preventive or remedy for a disease resulting from abnormal production or secretion of β -amyloid protein.

[Claim 20]

Use according to Claim 19, wherein the disease resulting from abnormal production or secretion of β amyloid protein is Alzheimer disease or Down syndrome.

[Claim 21]

A method of treating a disease resulting from abnormal production or secretion of β -amyloid protein, which comprises administering an effective amount of a compound as claimed in any one of Claims 1 to 13, an N-oxide or S-oxide thereof, a salt thereof, or a solvate thereof.

[Claim 22]

A treating method according to Claim 21, wherein the

disease resulting from abnormal production or secretion of β amyloid protein is Alzheimer disease or Down syndrome.